



TRANSMITTAL LETTER

IFW  
AF  
1711  
45

In re Application of  
**LARRY L. BRADFORD et al.**

**Serial No: 09/392,434**

**Filing Date: September 9, 1999**

**Title: POLYURETHANE FOAM CONTAINING  
FLAME RETARDANT BLEND OF  
NON-OLIGOMERIC AND OLIGOMERIC  
FLAME RETARDANTS**

**Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450**

: **Docket No: ACA 6124 US**

: **Examiner: R. Sergeant**

: **Group Art Unit: 1711**

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being  
deposited with the United States Postal Service  
as First-Class mail in an envelope addressed to:  
Commissioner for Patents, P.O. Box 1450,  
Arlington, VA 22313-1450

on June 1, 2004  
Christina Cangelosi  
Christina Cangelosi

Sir:

☒ Transmitted herewith find the document(s) related to this application:

**TRANSMITTAL LETTER IN DUPLICATE; APPEAL BRIEF WITH APPENDIX IN  
TRIPLICATE; CERTIFICATE OF MAILING; AND POSTCARD.**

☒ Applicant hereby petitions for an extension of time under 37 CFR 1.136 of:

☒ One Month (\$110.00)

☐ Two Months (\$ 400.00)

☐ Three Months (\$920.00)

☐ Four Months (\$1440.00)

☒ Appeal Brief (\$330.00)

The total fee believed due is **\$440.00**. Please charge this amount and any other fees,  
which may be due (including filing fees under 37 CFR 1.16 and processing fees under  
37 CFR 1.17) to Deposit Account No. 01-1350. If an extension of time is required but  
has not been requested above, Applicant hereby petitions for an extension of time  
sufficient for the attached document(s) to be timely. A duplicate copy of this sheet is  
enclosed.

Respectfully submitted,

Richard P. Fennelly

Richard P. Fennelly  
Attorney for Applicant(s)  
Reg. No. 25,677

Akzo Nobel Inc.  
Intellectual Property Department  
7 Livingstone Avenue  
Dobbs Ferry, NY 10522-3408  
Tel No.: (914) 674-5464



Patent

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

-----  
In re Application of  
LARRY L. BRADFORD et al.

Serial No: 09/392,434

Filing Date: September 9, 1999

Title: POLYURETHANE FOAM CONTAINING  
FLAME RETARDANT BLEND OF  
NON-OLIGOMERIC AND OLIGOMERIC  
FLAME RETARDANTS

-----  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

: Docket No: ACA 6124 US

: Examiner: R. Sergent

: Group Art Unit: 1711

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being  
deposited with the United States Postal Service  
as First-Class mail in an envelope addressed to:  
Commissioner for Patents, P.O. Box 1450,  
Arlington, VA 22313-1450

on June 1, 2004  
Christina Cangelosi  
Christina Cangelosi

APPEAL BRIEF

This is an appeal from the Final Rejection of Claims 1-3, 5-11,  
and 13-14, dated September 4, 2001, as modified by the Amendment  
Under Rule 116, which cancelled Claims 4 and 12.

The text of the current rejected Claim set is reproduced in the  
Appendix attached to this Appeal Brief.

REAL PARTY IN INTEREST

The real party in interest for this Appeal is Akzo Nobel N.V.,  
Arnhem, The Netherlands.

06/08/2004 DENMANU1 00000067 011350 09392434

01 FC:1402 330.00 DA

06/08/2004 DENMANU1 00000067 011350 09392434

02 FC:1251 110.00 DA

#### RELATED APPEALS AND INTERFERENCES

There was an earlier Appeal (No. 2003-0363), which resulted in an affirmance of the Examiner's position. The Claims under appeal in that proceeding failed to contain the limitation that the oligomeric component (b) had a hydroxyl number of no more than 30 mg KOH/g. This limitation was added after the decision in that Appeal was rendered.

#### STATUS OF CLAIMS

Claims 1-3, 5-11, 13 and 14 are pending herein and are subject of this Appeal. Claims 4 and 12 have been cancelled.

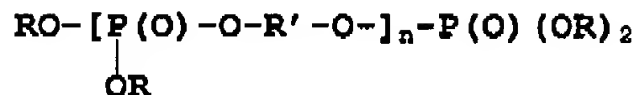
#### STATUS OF AMENDMENTS

An amendment was filed after Final Rejection that is deemed to have resulted in the removal of certain grounds of rejection under Section 112. An Advisory Action in that regard is awaited.

#### SUMMARY OF INVENTION

The present invention relates to a polyurethane foam that contains an effective amount for flame retardancy of a flame retardant blend consisting essentially of: (a) a non-oligomeric, non-halogenated, alkyl group-containing phosphate ester flame retardant; and (b) an oligomeric, non-halogenated organophosphorus flame retardant having a phosphorus content of no less than 10%, by weight, and at least three phosphorus atom-containing units therein. Component (b) has a hydroxyl number of no more than 30 mg KOH/g.

The preferred phosphate ester for use is an oligomeric organophosphate of the formula:



where n, on a number average basis, ranges from 2 to 20, and R is selected from the group consisting of alkyl and hydroxyalkyl, and R' is alkylene.

#### ISSUES

The following issues are presented in this Appeal:

1) Whether the Examiner was correct in rejecting now pending Claims 1-3, 5-7, 9-11 and 13 under 35 U.S.C. §103(a) as unpatentable over the Sicken (U.S. Patent No. 5,985,965) or Fearing (U.S. Patent Nos. 4,199,534 or 4,268,633), each in view of Keppeler (U.S. Patent No. 5,981,612); and

2) Whether the Examiner was correct in rejecting now pending Claims 7 and 13-14 under 35 U.S.C. §103(a) as unpatentable over the Sicken (U.S. Patent No. 5,985,965) or Fearing (U.S. Patent Nos. 4,199,534 or 4,268,633), each in view of Keppeler (U.S. Patent No. 5,981,612), as applied against now pending Claims 1-3 and 5-7, above, further in view of Hardy (U.S. Patent Nos. 4,382,042 or 4,458,035).

#### GROUPING OF CLAIMS

For purposes of the current Appeal, now pending Claims 1-3, 5-7, 9-11 and 13 stand apart from now pending Claims 7 and 13-14 in view of the Examiner's articulation of two separate grounds of rejection for each set of Claims.

#### ARGUMENT

The obviousness rejection of Claims 1-3, 5-7, 9-11 and 13 as unpatentable over Sicken or either of Fearing in view of Keppeler should be reversed by the Board for the following reasons:

- While the cited Sicken patent shows applicants' recited oligomeric component (b), this cited primary reference is utterly devoid of any *clear suggestion* of the selection of recited component (a) in Claim 1, which is a non-oligomeric, non-halogenated, alkyl-group containing phosphate ester. The Sicken patent contains only one, very vague indication at Col. 4, line 32 that its oligomeric flame retardants can be employed, if desired, "as a mixture with other flameproofing agents". There is no further direction supplied by Sicken as to what type of "flameproofing agent" is to be additionally selected. Clearly, Sicken only provides to the person of ordinary skill in the art an invitation to experiment and does not provide the type of suggestion needed to support either of the instant rejections<sup>1</sup>. Finally, the Sicken patent *teaches away* from the applicants' requirement that component (b) must have a hydroxyl number of *no more than 30 mg KOH/g* since Sicken, at Col. 4, lines 39-41 teaches that its composition has "a hydroxyl number of 30 to 300 mg of KOH/g". What Sicken wants for this component is a *reactive* additive, while the applicants desire a *much less reactive to substantially non-reactive* component. That is a major difference in the two respective approaches.

---

<sup>1</sup> The large number of possible choices shown by the Keppeler patent at Col. 7, line 33 to Col. 8, line 67 illustrates the applicants' contention of lack of suitable direction by Sicken.

- The Fearing references also fail to provide a sufficient basis for either rejection if considered. Like Sicken, they vaguely state that their particular flame retardants can be "... used in combination with other flame retarding agents ...." Again, there is no direction as to what type of agent is to be selected from the vast array of choices that might be presented to the person of ordinary skill in the art!
- In an effort to cure the aforementioned deficiencies of each of the primary citations (Sicken or either Fearing patent), the Examiner has additionally cited the Keppeler patent to allegedly suggest the particular selection of applicants' recited non-oligomeric, non-halogenated phosphate ester. However, this patent provides such a long list of possible choices stretching from Col. 7, line 33 to Col. 8, line 67 that it really affords no clear teaching or even suggestion of making such a specific choice. In fact, the section of this reference at Col. 8, lines 7-11 gives "preference" to "aminomethylated phosphonic acid esters" which are, like the Fearing teaching previously described, "phosphonates" rather than "phosphate esters", as now required. Any fair reading of Keppeler would, if anything, induce the person of ordinary skill in the art to move in the direction of selecting phosphonate flame retardants, rather than the required type of phosphate ester<sup>2</sup>.

---

<sup>2</sup> Col. 8, lines 53-62 of Keppeler list what it characterizes as being "[s]uitable additional flame proofing agents (emphasis added)", clearly implying that they are not intended to replace the selection of the preferred aminomethylated phosphonate species that have been identified by the applicants as being the choice that the person of ordinary skill in the art would make if the primary art and Keppeler were to be consulted.

In view of the comments just made, the Board is requested to reverse the first obviousness rejection that the Examiner has interposed in the Final Rejection.

The second obviousness ground of rejection that the Examiner has interposed, utilizing the further citation of the Hardy patents, should also be reversed since the additional citation of the Hardy patents does not cure the deficiencies noted for the references used by the Examiner to allegedly support the underlying (first) ground of rejection.

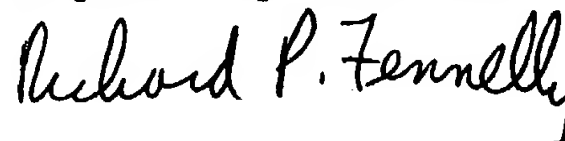
➤ The previously articulated argument as to why Sicken, Fearing and Keppeler do not show the major outlines of what is articulated as the basis for the invention recited in Claims 7 and 13-14 is incorporated herein by reference.

➤ The applicants deem that the additionally cited Hardy patents would not cure the previously discussed deficiencies of Sicken, Fearing and Keppeler. Moreover, the primary citation to Sicken, at Col. 2, lines 12-31, specifically mentions the Hardy '035 patent and identifies certain of its disadvantages at lines 26-31. No person in the art would therefore think of combining any suggestions that he or she might glean from examination of either of the Hardy patents in view of this apparent denigration of that earlier work by Sicken! Clearly, combining Sicken with either of the Hardy patents is based on an improper hindsight reconstruction of the prior art on the part of the Examiner since Sicken, if anything, teaches against such a combination by its denigration of the Hardy approach. It is well settled that a determination of

obviousness must involve more than indiscriminately combining prior art --- a motivation or suggestion to combine such prior art *must* exist. See, for example, ACS Hosp. Sys., Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984).

Reversal of both obviousness grounds of rejection that have been interposed against the pending Claims is requested in view of the comments contained herein.

Respectfully submitted,



Richard P. Fennelly  
Attorney for Applicant  
Reg. No. 25,677

Akzo Nobel Inc.  
7 Livingstone Avenue  
Dobbs Ferry, New York 10522-3408  
(914) 674-5464  
6124AB2.DOC





APPENDIX  
THE REJECTED CLAIMS

1. A polyurethane foam that contains an effective amount for flame retardancy of a flame retardant blend consisting essentially of: (a) a non-oligomeric, non-halogenated, alkyl group-containing phosphate ester flame retardant; and (b) an oligomeric, non-halogenated organophosphorus flame retardant having a phosphorus content of no less than 10%, by weight, a hydroxyl number of no more than 30 mg KOH/g, and at least three phosphorus atom-containing units therein.

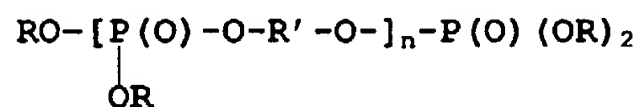
2. A foam as claimed in Claim 1 wherein flame retardant (a) in the blend is a non-halogenated phosphate ester containing alkyl groups.

3. A foam as claimed in Claim 1 wherein flame retardant (a) in the blend is either propylated or butylated triphenyl phosphate.

5. A foam as claimed in Claim 2 wherein flame retardant (a) in the blend is present at from about 25% to about 95%, by weight of the blend.

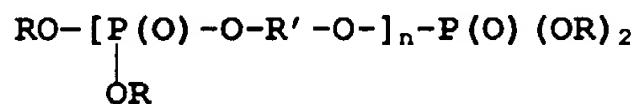
6. A foam as claimed in Claim 3 wherein flame retardant (a) in the blend is present at from about 25% to about 95%, by weight of the blend.

7. A foam as claimed in any of Claims 1-3 or 5-6 wherein the oligomeric organophosphorus flame retardant is an oligomeric organophosphate flame retardant in the blend of the formula:



where n, on a number average basis, ranges from 2 to 20, and R is selected from the group consisting of alkyl and hydroxyalkyl, and R' is alkylene.

8. A foam as claimed in any of Claims 1-3 or 5-6 wherein the oligomeric organophosphorus flame retardant is an oligomeric organophosphate flame retardant in the blend of the formula:



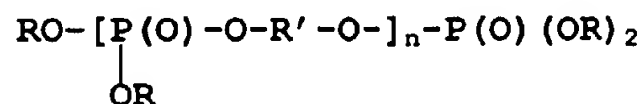
where n, on a number average basis, ranges from 2 to 20, and R and R' are ethyl and ethylene, respectively.

9. A polyurethane foam that contains an effective amount for flame retardancy of a flame retardant blend consisting essentially of: (a) from about 40% to about 70%, by weight of the blend, of a non-oligomeric, non-halogenated phosphate ester flame retardant; and (b) from about 30% to about 60%, by weight of the blend, of an oligomeric, non-halogenated organophosphorus flame retardant having a phosphorus content of no less than 10%, by weight, a hydroxyl number of no more than 30 mg KOH/g, and at least three phosphorus atom-containing units therein.

10. A foam as claimed in Claim 9 wherein flame retardant (a) in the blend is a non-halogenated phosphate ester containing alkyl groups.

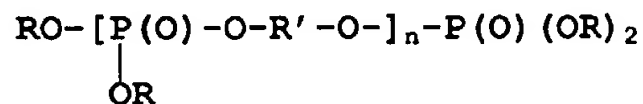
11. A foam as claimed in Claim 9 wherein flame retardant (a) in the blend is a non-halogenated phosphate ester containing aryl groups.

13. A foam as claimed in any of Claims 9-11 wherein the oligomeric organophosphorus flame retardant is an oligomeric organophosphate flame retardant in the blend of the formula:



where n, on a number average basis, ranges from 2 to 20, and R is selected from the group consisting of alkyl and hydroxyalkyl, and R' is alkylene.

14. A foam as claimed in any of Claims 9-11 wherein the oligomeric organophosphorus flame retardant is an oligomeric organophosphate flame retardant in the blend of the formula:



where n, on a number average basis, ranges from 2 to 20, and R and R' are ethyl and ethylene, respectively.